

**REMARKS**

Claims 1-21 are pending in this application. By this Amendment, claims 1, 5, 7, 9, 11 and 17 are amended and claims 19-21 are added. No new matter is added. Support for the claims can be found throughout the specification, including the original claims, and the drawings. Reconsideration in view of the above amendments and following remarks is respectfully requested.

**I. REJECTION UNDER 35 U.S.C. §102(e)**

The Office Action rejects claims 1-4 and 6-8 under 35 U.S.C. §102(e) as allegedly anticipated by Chalupa et al., U.S. Patent No. 6,336,865 (hereafter "Chalupa"). This rejection is respectfully traversed.

Independent claim 1 recites detecting a phase voltage value and a phase current value applied to the motor between forward and backward revolution sections of the motor; calculating a phase resistance value based on the detected phase voltage and current values and an operational frequency value; and controlling the operation of the motor by controlling a voltage applied to the motor in accordance with the calculated phase resistance value. Chalupa neither discloses nor suggests such features.

That is, Chalupa discloses a method to estimate coil resistance  $R$  by determining voltage  $u(t)$  and current  $i(t)$  in a time interval between time points  $t_1$  and  $t_2$  when the coil is energized, estimating magnetic flux at the point  $t_2$  by integrating  $u(t) - [i(t) * R]$  over the time interval  $(t_1, t_2)$ , calculating resistance error, and then calculating resistance from resistance error and preliminary resistance. Chalupa does not disclose or suggest the claimed detection of a phase voltage value

and a phase current value applied to the motor between forward and backward revolution sections of the motor. Further, Chalupa's method teaches the calculation of resistance based on a preliminary resistance, estimated magnetic flux, and resistance error, and does not disclose or suggest the calculation of a phase resistance value based on the phase voltage and current values detected between forward and backward revolution sections of the motor and an operational frequency value, as recited in claim 1.

Accordingly, it is respectfully submitted that independent claim 1 is not anticipated by Chalupa, and that the rejection of independent claim 1 under 35 U.S.C. §102(e) should be withdrawn. Dependent claims 2-6, as well as newly added claim 19, are allowable at least for the reasons discussed above with respect to independent claim 1, from which they depend, as well as for their added features.

Independent claim 7 recites, *inter alia*, detecting a phase voltage value and a phase current value applied to the motor at a middle section between forward and backward revolution sections of a sensorless brushless direct current motor; and calculating a phase resistance value based on the detected phase voltage and current values and an operational frequency value. Chalupa neither discloses nor suggests such features. As discussed above, Chalupa discloses the determination of voltage  $u(t)$  and current  $i(t)$  in a time interval between time points  $t_1$  and  $t_2$  when the coil is energized. Chalupa does not disclose or suggest the claimed detection of a phase voltage value and a phase current value applied to the motor between forward and backward revolution sections of the motor. Further, Chalupa teaches the calculation of resistance based on a preliminary resistance, estimated magnetic flux, and resistance error, and

not the claimed calculation based on phase voltage and current values detected between forward and backward revolution sections and an operational frequency value.

Accordingly, it is respectfully submitted that independent claim 7 is not anticipated by Chalupa, and that the rejection of independent claim 7 under 35 U.S.C. §102(e) should be withdrawn. Dependent claims 8-10, as well as newly added claims 20-21, are allowable at least for the reasons discussed above with respect to independent claim 7, from which they depend, as well as for their added features.

## II. REJECTION UNDER 35 U.S.C. §102(b)

The Office Action rejects claims 11-14 under 35 U.S.C. §102(b) as being anticipated by Nashiki et al., U.S. Patent No. 5,896,019 (hereafter "Nashiki"). This rejection is respectfully traversed.

Independent claim 11 recites, *inter alia*, a revolution section detect unit configured to calculate an operational frequency of the motor based on phase voltage and current values applied to the motor and configured to output a section detect signal by detecting an operational section of the motor in accordance with the calculated operational frequency. Nashiki neither discloses nor suggests such features.

That is, Nashiki discloses a rotational position sensing system that can measure the incremental position of the rotor. The rotational position sensing system disclosed by Nashiki (see column 1, lines 37-39, column 2, lines 15-19, and Figure 10, element 9) is merely a fixed sensor configured to detect and report the incremental rotational positions of the rotor as it passes the sensor when the rotor is in motion, and can only detect rotor position when the rotor

is in motion. The rotational position sensing system taught by Nashiki does not calculate an operational frequency and output a corresponding section detect signal based on the operational section detected and the calculated operational frequency as recited in independent claim 11. Accordingly, it is respectfully submitted that independent claim 11 is not anticipated by Nashiki, and that the rejection of independent claim 11 under 35 U.S.C. §102(b) should be withdrawn. Dependent claims 12-14 are allowable at least for the reasons discussed above with respect to independent claim 11, from which they depend, as well as for their added features.

### **III. REJECTION UNDER 35 U.S.C. §103(a)**

The Office Action rejects claims 15-18 under 35 U.S.C. §103(a) as being unpatentable over Nashiki, in view of Chalupa. This rejection is respectfully traversed.

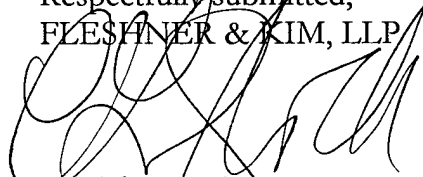
Chalupa fails to overcome the deficiencies of Nashiki discussed above with respect to independent claim 11, from which claims 15-18 depend, as Chalupa is merely cited to teach the motor's use in a washing machine. Accordingly, dependent claims 15-18 are allowable at least for the reasons discussed above with respect to independent claim 11, from which they depend, as well as for their added features. Accordingly, it is respectfully submitted that the rejection of claims 15-18 under 35 U.S.C. §103(a) should be withdrawn.

**IV. CONCLUSION**

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **Carol L. Druzbiek**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,  
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